

## REMARKS

Claims 47-97 are pending in the present application. Claims 47-97 have been examined and are rejected. In the above amendments, claims 47, 48, 52-56, 58-62, 81, 84-86 and 91-94 have been amended. Therefore, after entry of the above amendments, claims 47-97 will be pending in this application. Applicant believes that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

### **Rejection of Claims 47-72, 75, 78, 81-93, 95 and 96 Under 35 U.S.C. §102(e)**

Claims 47-72, 75, 78, 81-93, 95 and 96 stand rejected under 35 U.S.C. §102(e) as being anticipated by Faulkner (U.S. Patent No. 6,606,484).

Faulkner describes a receiver **1** having a mixer **3**, a distortion correction circuit **5**, and a demodulated signal path **8**. (See Fig. 1.) Mixer **3** receives a modulated radio frequency (RF) carrier signal and a local oscillator signal and generates a downconverted signal **v**. Distortion correction circuit **5** includes a squaring circuit **6** and a distortion estimate signal path **9**. Squaring circuit **6** receives the downconverted signal **v** from mixer **3** and generates a squarer output signal **v2**. Distortion estimate signal path **9** receives the squarer output signal **v2** and generates a distortion estimate signal **w** or **x**, which is subtracted from demodulated signal path **8**. (See column 3, line 52 to column 4, line 4.)

Claim 47 of the present invention, as amended, recites:

“A circuit including a compensation branch for reducing second order non-linear distortion in a receiver, the compensation branch comprising:

    a squaring circuit for receiving a received RF signal provided to an input of a mixer in the receiver and generating a squared version of the received RF signal;

    a gain stage for receiving the squared version of the received RF signal and reproducing second order nonlinear distortion in the receiver; and

    an output coupling circuit for coupling the reproduced second order nonlinear distortion to an output of the receiver to generate a down-converted baseband signal characterized with reduced second order nonlinear distortion.”

Applicant submits that claim 47 is not anticipated by Faulkner for at least the following reasons.

First, Faulkner does not disclose “a squaring circuit for receiving a received RF signal provided to an input of a mixer in the receiver,” as recited in claim 1. Rather, Faulkner

describes “squaring circuit **6** for squaring the mixer output signal.” (See Fig. 1, where squaring circuit **6** receives the output of mixer **3**, and also column 3, line 58.)

Second, Faulkner does not disclose “a squaring circuit … generating a squared version of the received RF signal,” as recited in claim 1. Rather, Faulkner generates a squared version of the mixer output signal.

Third, Faulkner does not disclose “a gain stage for receiving the squared version of the received RF signal and reproducing second order nonlinear distortion in the receiver,” as recited in claim 1. Rather, Faulkner describes a gain scaling unit **7** receiving the square of the mixer output signal.

In claim 47, the squaring circuit operates on the received RF signal prior to down conversion by the mixer. This allows the compensation branch of claim 47 to reproduce second order nonlinear distortion due to two interfering channels spaced apart by  $\Delta\omega_J$ , which creates a distortion component at a frequency  $\Delta\omega_J$  in the output signal. (See paragraph 0007.)

In Faulkner, the squaring circuit operates on the mixer output signal after down conversion. This allows Faulkner to cancel second order distortion generated by a different mechanism. In Faulkner, the input RF signal  $u(t)$  provided to mixer **3** leaks into the LO signal  $r(t)$ . This results in the output of mixer **3**  $v(t)$  containing five terms in the equation shown in column 4, line 60. The fourth term  $|a(t)|^2$  in the mixer output signal  $v(t)$  is the second order distortion due to a jamming signal. Faulkner uses the second term  $Re\{a(t)e^{j\omega_0 t}\}$  in the mixer output signal  $v(t)$  to generate the second order distortion  $|a(t)|^2$  in the mixer output signal. (See column 4, line 38 to column 5, line 15.)

The distortion correction circuit of Faulkner thus works in a different manner and addresses a different problem than the circuit of claim 47.

For at least the above reasons, Applicant submits that claim 47 is not anticipated by Faulkner. Claims 47-72, 75, 78, 93, 95 and 96 are dependent on claim 47 and are not anticipated by Faulkner for at least the reasons noted for base claim 47. These dependent claims may recite additional features not disclosed by Faulkner.

Independent claims 81, 86 and 91 have each been amended to recite the features noted above for claim 47. Claims 82-85 are dependent on claim 81, claims 87-90 are dependent on claim 86, and claim 92 is dependent on claim 91. These dependent claims are not anticipated by Faulkner for at least the reasons noted for claim 47.

Accordingly, the §102(e) rejection of claims 47-72, 75, 78, 81-93, 95 and 96 should be withdrawn.

**Rejection of Claims 73, 74, 76, 77, 79, 80, 94 and 97 Under 35 U.S.C. §103(a)**

Claims 73, 74, 76, 77, 79 and 80 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Rahamim (U.S. Patent No. 5,541,990).

Claim 94 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Kimura (U.S. Patent No. 5,552,734).

Claim 97 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Faulkner in view of Marchesani *et al.* (U.S. Patent No. 5,883,551).

Claims 73, 74, 76, 77, 79, 80, 94 and 97 are dependent on claim 47. Faulkner does not disclose all of the features of base claim 47, as noted above. Hence, Faulkner is an insufficient basis for the §103(a) rejection of dependent claims 73, 74, 76, 77, 79, 80, 94 and 97.

Accordingly, the §103(a) rejection of claims 73, 74, 76, 77, 79, 80, 94 and 97 should be withdrawn.

**CONCLUSION**

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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